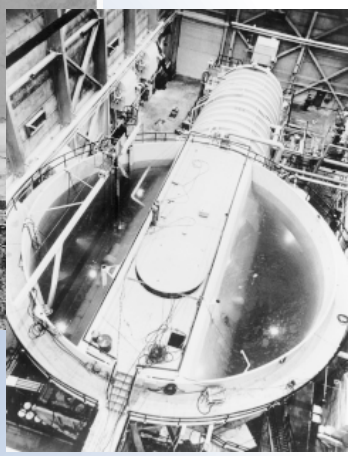
From its early days as a Naval gunnery range, and with more recent missions – such as nonproliferation and critical infrastructure protection – INL has played a major role in the nation's security.



National Security

National and Homeland Security

Since its inception in 1949, Idaho National Laboratory has created products and developed solutions that are saving lives from the home front to the battlefield.

During World War II, INL was a proving ground for the U.S. Navy's long-range artillery weapons. In the early 1950s, the laboratory designed and operated the Nautilus S1W, the prototype of the Navy's first nuclear submarine. In recent times, INL has become the lead manufacturer of heavy armor for the Army's M1-A1 Abrams tanks, developed systems for detecting explosives and nuclear materials in cargo trucks, and created a Critical Infrastructure Test Range where the nation's infrastructures can be tested and strengthened against acts of terrorism. For more than 55 years, Idaho National Laboratory has worked to improve the security of our country.

Today, the laboratory's national and homeland security objectives continue. Recent national and international events – from the War on Terrorism to the threat of nuclear weapons – have led INL to formulate five national and homeland security mission areas. Within each of these areas, INL leverages its scientific expertise, engineering discipline and unique

Continued next page

INL Idaho National Laboratory

INL's Pulsed Photonuclear Assessment Technology can detect concealed nuclear materials hidden in shipping containers.

INL nonproliferation experts work to convert high-enriched uranium reactor fuel into low-enriched fuel that is not usable for nuclear weapons.

Continued from previous page

infrastructure assets to develop solutions to meet the daily challenges faced by our military, law enforcement, homeland security and intelligence communities.

Global Security

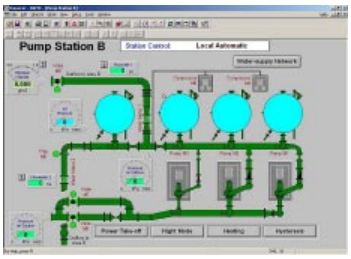
Protecting our homeland and citizens from terrorist activities involves not just security within our borders, but security and stability in international locations, too. INL researchers are developing stand-off technologies to detect shielded special nuclear materials. Our Pulsed Photonuclear Assessment Technology reduces the global threat and proliferation of weapons of mass destruction by scanning shipping containers for concealed nuclear materials encased in lead.

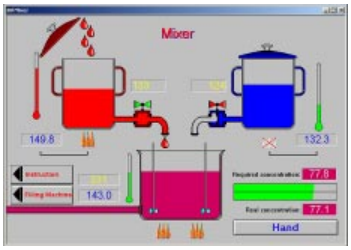
Partnering with DOE's National Nuclear Security Administration, INL scientists are working on two programs within the Global Threat Reduction Initiative, which works to remove and secure high-risk nuclear and radiological materials and equipment worldwide that pose a threat to the United States and to the international community. Our efforts in this area continue to decrease the amount of dangerous material available to terrorist organizations and nation states.

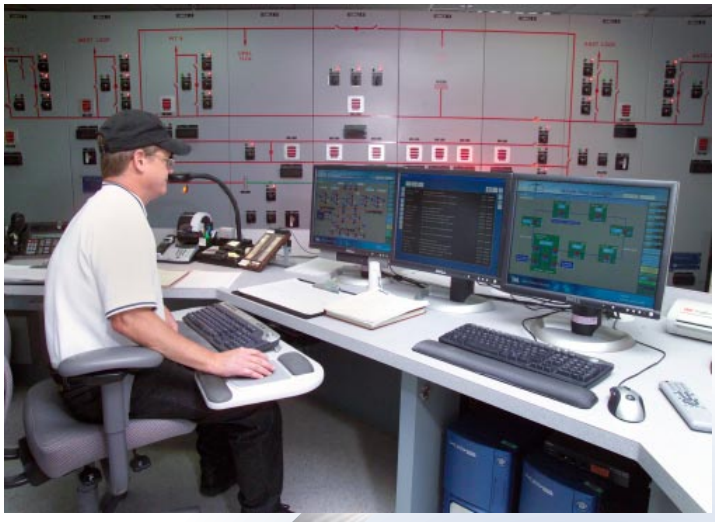
Homeland Security

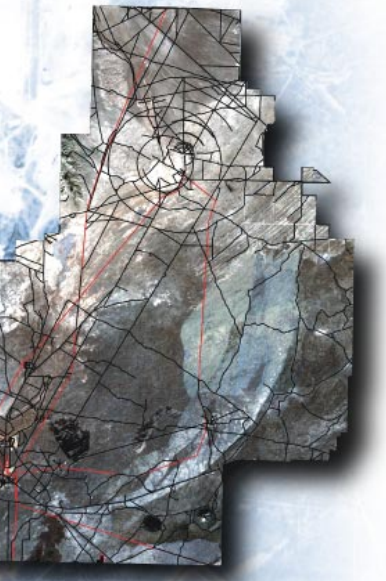
Developing technologies that protect our citizens from acts of terrorism within the United States is an increasingly important area for INL. To meet this objective, the laboratory established a

INL's Critical Infrastructure Test Range includes a self-contained power grid, pipeline system and wireless test bed for securing the nation's infrastructures.









Using INL's expertise and full-scale, independent grid, researchers are developing technologies to secure the computer-aided control systems that operate our nation's electricity, water and telecommunication systems.

INL energy security researchers are developing a transmission line sensor that can remotely detect tampering on high-voltage power lines.

Critical Infrastructure Test Range that allows for full-scale testing and analyses of infrastructure systems and new technologies designed to protect our country.

Using our 890-square-mile Test Range, engineers have fitted lightweight, low-cost unmanned aerial and ground vehicles with sensors to be used to perform surveillance over large infrastructures such as power and gas pipelines or during emergency events such as forest fires. Our Test Range includes a full-scale power grid that can be used to test surveillance sensors on our unmanned aerial vehicles. INL researchers are also working with the Federal Aviation Administration on technologies that can detect trace amounts of explosives at airports.

Researchers have recently partnered with private utility industries and universities to mitigate the threat posed by cyber attacks on the computer systems that operate our nation's critical infrastructure systems such as telecommunication networks, water treatment facilities, and oil and gas refineries. We are also developing new wireless technologies to improve communications security, networking and reliability.

Energy Security

As a U.S. Department of Energy national laboratory, INL supports DOE's energy security mission and is dedicated to developing processes and technologies to improve the security and reliability of the country's electric power grid.

Scientists and engineers are working jointly with private electric utilities to increase cybersecurity standards and technologies within Supervisory Control and Data Acquisition Systems. Using INL's expertise and full-scale, independent grid, researchers are analyzing both national and international vendor systems and providing real-time research results based on tests using our grid.

Continued next page

INL's award-winning Explosives Detection System identifies smuggled explosive materials in cargo trucks entering military bases, government facilities and parking garages.

Continued from previous page

Employees have also developed technologies, such as our transmission line sensor, that can be attached to major transmission lines and used to detect tampering.

National Defense

Safeguarding our soldiers involved in global conflicts requires innovative solutions that meet and exceed the challenges faced in modern warfare. The laboratory has a long history of supporting our servicemen and women both at home and abroad. We work with all branches of the U.S. military to develop technologies that protect our soldiers and citizens.

For more than a decade, INL has been the sole producer of heavy armor for the Army's M1-A1 Abrams tank fleet. Today, we continue our work in this area, as we perform research, development and testing on next-generation lightweight armor for equipment and personnel.

Researchers also have developed technologies, such as the portable isotopic neutron spectroscopy, or PINS system, which is routinely used by our military to identify the contents of unexploded munitions. This system, an R&D 100 Award winner, is capable of identifying nerve and blister agents, explosives and compressed gases.

INL engineers perform work and develop technologies for the assessment of chemical weapons. The program includes multiple projects in mobile and fixed chemical munitions assessment such as the Mobile Munitions Assessment System, which characterizes nonstockpile chemical weapons material for compliance with the Chemical Weapons Convention.

We also have developed the Idaho Explosives Detection System for the detection of stand-off explosive devices that can be smuggled in cargo trucks entering military bases and parking garages.

Special Programs

INL researchers perform essential work for customers in the intelligence community.

INL recently developed a Change Detection System that can identify subtle changes in digital photographs taken minutes or weeks apart. This award-winning technology has applications in surveillance, but is also being looked at as a medical tool for analyzing changes in MRIs and X-rays. Additionally, researchers have developed a solid composite polymer for batteries that allows devices such as GPS units and laptops to run for longer periods of time between charges.

Innovative Solutions

For more than a half century, Idaho National Laboratory scientists and engineers have innovatively addressed some of the country's most pressing security needs. As new challenges arise, INL will continue to be called on to provide the solutions and tools needed to protect our country and its citizens.

For more information:

Ethan Huffman
(208) 526-0660
Ethan.Huffman@inl.gov
www.inl.gov/nationalsecurity

A U.S. Department of Energy National Laboratory

INL performs research, development and testing on next-generation lightweight armor for equipment and personnel.